


Chapter 3

Tailored Learning at Scale:


Leveraging Generative AI for Dynamic Content Creation in Special Education

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ABSTRACT

This chapter explores the transformative role of Generative Artificial Intelligence (GenAI) in special education, focusing on its potential to advance individualized and inclusive learning. It discusses how GenAI can dynamically generate content tailored to diverse student needs while highlighting that technology alone is insufficient without collaboration among teachers, researchers, families, and policymakers. The chapter addresses key ethical concerns such as informed consent, data privacy, and algorithmic bias. It emphasizes both the opportunities—like enhancing accessibility and reducing workload—and the risks, including the potential creation of new inequalities. Ultimately, it proposes that when used ethically and pedagogically, GenAI can transform formerly “impossible” goals in special education into sustainable, equitable learning realities.

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INTRODUCTION

For many years, the pursuit of individualized instruction within the constraints of traditional teaching methods has been regarded in special education as either “impossible” or merely an idealistic aspiration. Overcrowded classrooms, limited resources, and the multifaceted needs of students have made it particularly difficult for teachers to design instructional processes responsive to individual differences. However, the rapid development of generative artificial intelligence (GenAI) technologies in recent years has ushered in a new era with the potential to fundamentally transform the concept of quality teaching in special education. This chapter offers a comprehensive exploration of GenAI’s impact on individualized learning processes within the context of special education. It presents a multidimensional discussion ranging from dynamic content generation tailored to student characteristics and inclusive design, to the redefinition of teacher roles and the risks associated with algorithmic bias. Ethical and security-related considerations are also addressed in depth, prompting a critical examination of the pedagogical boundaries of technological capabilities and highlighting the necessity of a human-centered approach. The examples provided throughout the chapter underscore the importance of hybrid models in which teacher expertise and intuition are integrated with technological systems—not merely as technology-driven solutions, but as essential components of effective practice. In this respect, the chapter emphasizes that the provision of accessible, equitable, and safe learning environments for individuals with special needs through GenAI is not only a technical challenge but also an ethical, pedagogical, and social imperative.

THE FUTURE OF INDIVIDUALIZED LEARNING: INTEGRATING SPECIAL EDUCATION EXPERIENCE WITH GENERATIVE ARTIFICIAL INTELLIGENCE

Is it possible to claim that every student shares the same cognitive, emotional, and developmental characteristics? Can it be argued that a fixed or one-size-fits-all instructional model would be sufficient for every learner? In a field like special education, where the diversity of individuals and the uniqueness of their needs are central, is it feasible to disregard the necessity of individualized and flexible instructional approaches? Considering the homogeneous structure of traditional education systems, it is evident that they often fall short in fostering the potential of students facing developmental delays, learning difficulties, or other special needs. At this point, individualized learning refers to structuring methods, content, and objectives around the student’s strengths (Bernard et al., 2019). Individualized learning may involve

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